

Clearly the marked size-variation in the Greater Honeyguide can be no further dealt with on the basis of existing material. The diminution in individual size in some populations of *I. indicator*, as demonstrated above, is undoubtedly connected to temperature and relative humidity in the biotope, but it may also be in some way associated with some difference in breeding biology, such as an adaptation to enable such populations to exploit a range of smaller hole-nesting host species.

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## The lower altitudinal limit of the montane forest birds of the Cameroon Mountain, West Africa

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From a study of the literature, notably Reichenow (1892) and Bannerman (1915 and 1930-1951), one would infer that the 3,000 ft. contour marks the lower limit of the montane forest birds of the Cameroon Mountain.

Indeed, although the Cameroon Mountain has attracted many collectors and observers who have recorded what they saw and collected, I can find references to only four true montane forms occurring below the 3,000 ft. contour, namely, *Turdus libonyanus nigrilorum* Reichenow at 1,700 ft. (Serle, 1962, p. 125), *Psalidoprocne fuliginosa* Shelley at 2,500 ft. (Young, 1946, p. 381), *Laniarius poensis poensis* (Alexander) at 1,400 ft. (Serle, 1950, p. 620), and *Cinnyris reichenowi preussi* Reichenow at 1,000 ft. (Serle, 1950, p. 625 and 1954, p. 74).

In tropical Africa an altitude of 3,000 ft. is remarkably low for the occurrence of typical montane bird communities (*c.f.* Hall and Moreau, 1962, p. 317 footnote), yet it appears from the notes that follow that such communities exist at even lower altitudes on the Cameroon Mountain, at least on its south-eastern slopes.

The search for montane forms at low altitudes met with most success in the neighbourhood of Saxenhof (4° 6' N., 9° 13' E.). Primary forest no longer exists at Saxenhof (indeed most of the area of the south-eastern slopes of the Mountain below 3,000 ft. has long since been cleared for plantations and native farms) and the montane birds inhabited patches of poor cut-out second growth and shrubbery.

In the following list of birds occurring at or near Saxenhof, a Roman numeral indicates the month of the year of the observation and an asterisk indicates that the record was confirmed by collecting a specimen or specimens. The altitudes were measured with an altimeter.

- Viridibucco coryphaea coryphaea* (Reichenow), 1,700 ft. V\*.  
*Arizelocichla tephrolaema tephrolaema* (Gray), 1,800 ft. VIII\*, X\*, 1,900 ft. VI\*; 2,000 ft. XI\*, XII\*; 2,300 ft. IX\*.  
*Arizelocichla montana* (Reichenow), 1,800 ft. X\*; 2,000 ft. IX\*; 2,200 ft. VIII\*.  
*Turdus libonyanus nigrilorum*, 1,700 ft. VII\*.  
*Alethe poliothorax* Reichenow, 1,900 ft. VI.  
*Urolais epichlora epichlora* (Reichenow), 1,750 ft. XII\*; 1,800 ft. X\*; 1,900 ft. IX\*.  
*Psalidoprocne fuliginosa*, 1,700 ft. IV, VIII, IX, XI.  
*Coracina caesia preussi* (Reichenow), 1,900 ft. VI\*.  
*Laniarius poensis poensis*, 1,700 ft. V\*, VI\*, VII\*; 1,800 ft. IX\*; 2,000 ft. XI\*, XII\*.  
*Zosterops senegalensis stenocricotus* Reichenow, 1,700 ft. II\*, V\*; 1,800 ft. V\*, VI\*; 2,000 ft. XII\*.  
*Cinnyris reichenowi preussi*, 1,700 ft. VII\*; 1,800 ft. VI\*; 2,000 ft. VIII\*.  
*Cyanomitra oritis oritis* (Reichenow) 1,900 ft. VI\*; 2,000 ft. IX\*; 2,200 ft. VIII\*.  
*Ploceus melanogaster melanogaster* Shelley, 1,800 ft. VI\*, X\*; 2,000 ft. IX\*.

Whilst Saxenhof was the most fruitful collecting area, data, set out below were obtained at a few other low altitude localities. With the exception of Debundscha and Idenau, where the anomalous *Psalidoprocne fuliginosa* occurred, all these localities are within a radius of ten miles of Saxenhof and are on the south-eastern slopes of the Mountain.

- Heterotrogon vittatum camerunense* Reichenow Powo (4° 14' N., 9° 20' E.), 900 ft. IX\*.  
*Campethera tullbergi tullbergi* Sjöstedt. West of Buea, 2,800 ft. VI\*.  
*Arizelocichla tephrolaema tephrolaema*, Victoria (4° N., 9° 12' E.), sea-level XII\*.  
*Arizelocichla montana*, Lisoka (4° 11' N., 9° 17' E.), 1,900 ft. VII\*.  
*Alethe poliothorax*, Bonikando (4° 11' N., 9° 12' E.), 2,100 ft. VII, 2,800 ft. VII\*.  
*Psalidoprocne fuliginosa*, Idenau (4° 15' N., 8° 59' E.), Debundscha (4° 6' N., 8° 59' E.), Victoria, Powo. *vide infra*.  
*Laniarius poensis poensis*, Ekona, 1,400 ft. VIII\*; Lisoka, 1,900 ft. VII\*; Bonjongo, 1,500 ft. X\*.  
*Cinnyris reichenowi preussi*, Victoria, sea-level VII\*, VIII\*; Lisoka, 1,600 ft. VII\*.

Two members of this group of fifteen forms stand apart from the rest, *Psalidoprocne fuliginosa* and *Cinnyris reichenowi preussi*. *Psalidoprocne fuliginosa* should perhaps not be regarded as a true montane form. It occurs commonly throughout the year, not only on the Mountain but also at sea level on the coast from Victoria westward to Idenau. *Cinnyris reichenowi preussi* is a seasonal local migrant. During the months of June to August, its non-breeding season, it is widely and commonly dispersed in the lowlands in the vicinity of the Mountain. There is no evidence that it occurs at Saxenhof or at any locality lower than 3,000 ft. during the dry season, which is the breeding season.

Disregarding these two anomalous forms there remains a group of montane forest birds whose lower distributional limit on the Cameroon Mountain is the 1,700 ft. contour or thereabouts. Their occurrence at this

low altitude may in the case of certain species be seasonal, but from the scattered (in terms of the month in which observed) nature of the records, it appears that the group as a whole is resident at these altitudes.

The 1,700 ft. contour is scarcely ever transgressed. *Laniarius poensis poensis* perhaps the most abundant and adaptable species of the group occurs as low as 1,400 ft., and there are records (two only) of *Arizelocichla tephrolaema tephrolaema* at sea-level and one record of *Heterotrogon vittatum camerunense* at 900 ft.

In this connection it is instructive to study the distribution of *Turdus libonyanus nigrilorum* the only form of the group which has a lowland representative in continuous distribution with it on the lower slopes of the Mountain. In a series of 41 *Turdus libonyanus* collected by me on the Mountain, the specimens of *Turdus libonyanus saturatus* (Cabanis), (the lowland race) were all taken between sea-level and 1,400 ft. except one at 2,100 ft. and one at 2,300 ft.; the specimens of *Turdus libonyanus nigrilorum* were all taken at altitudes between 3,300 ft. and 9,500 ft. except one at 1,700 ft.; and the intermediates were all taken between 1,200 ft. and 2,000 ft., except one at 2,900 ft., one at 3,200 ft., and one at 3,500 ft. (Serle, 1962, page 125).

There is no clear reason for the abnormally low descent of the montane forest birds of the Cameroon Mountain. A study of the climate of the area (see especially Semmelhack, 1940 and 1942) reveals, for example, no greater differences between the temperature and relative humidity of Duala (a typical locality at sea-level) and Buea (3,000 ft.) than one would expect from the difference in altitude. The rainfall of any locality on the Mountain is related, not to altitude, but roughly to its proximity to Isobi on the coast at the western base of the Cameroon Mountain, a locality with a quite abnormally high annual precipitation (over 10,000 mm.).

One climatic feature which may have a bearing on the distribution of the montane birds is the belt of mist which so often enshrouds the mountain forest. In the rainy season in particular the forest is often sunless and mist enveloped and its foliage is dripping. In the year 1913 Semmelhack (1942, p. 27) records that at Buea in the whole of July and August there was only one day without mist, on many occasions the mist persisted for the whole or almost the whole day, and the average daily sunshine for these two months was less than one hour. It is significant that, as I have often observed, the lower limit of the mist belt on the south-eastern slopes at about 1,700 ft.

Lastly it will have been noticed that many of the species of the montane bird communities of the higher slopes of the Mountain are absent from Saxenhof. The possible reasons for their absence are many. The most obvious is ecological, namely the complete absence from Saxenhof (and from the other low altitude localities mentioned above) of good forest.

There is appended a full list of the montane forest birds of the Cameroon Mountain, with records from my notes of their lower altitudinal limit. There is added the records of other authors when the lower altitudinal limit quoted by them is lower than my own. In most instances the difference is one of a few hundred feet only, and in the case of Reichenow's and Bannerman's records, which were based respectively on Preuss's and Boyd Alexander's collections, the probable reason for the slight discrepancy is that in Preuss's and Boyd Alexander's day, the forest extended lower in the vicinity of Buea than it does now.



- Francolinus camerunensis* Alexander, 4,800 ft.  
*Columba arquatrix sjöstedti* Reichenow, 6,000 ft.  
*Apolopelia larvata inornata* Reichenow, 4,000 ft.  
*Heterotrogus vittatum camerunense* Reichenow, 900 ft.  
*Viridibucco coryphaea coryphaea* Reichenow, 1,700 ft.  
*Campethera tullbergi tullbergi* Sjöstedt, 2,800 ft.  
*Mesopicos ellioti johnstoni* Shelley, 4,800 ft. Boulton and Rand (1952),  
4,500 ft.  
*Pseudoalcippe abyssinicus monachus* (Reichenow), 3,200 ft. Reichenow  
(1892), 3,000 ft.  
*Phyllastrephus poensis* Alexander, 3,500 ft. Bannerman (1915), 3,000 ft.  
*Phyllastrephus poliocephalus* (Reichenow), 4,000 ft. Reichenow (1892),  
3,900 ft.  
*Arizelocichla tephrolaem tephrolaema* (Gray), Sea-level.  
*Arizelocichla montana* (Reichenow), 1,800 ft.  
*Alseonax adustus obscurus* Sjöstedt, 3,500 ft.  
*Trochocercus albiventris albiventris* Sjöstedt, 3,300 ft.  
*Turdus libonyanus nigrilorum* Reichenow, 1,700 ft.  
*Geokichla crossleyi* (Sharpe), 5,000 ft.  
*Cossypha isabellae isabellae* Gray, 3,500 ft. Bannerman (1915), 3,000 ft.  
*Alethe poliothorax* Reichenow, 1,900 ft.  
*Seicercus herberti herberti* (Alexander), 4,200 ft. Bannerman (1915),  
3,000 ft.  
*Bradypterus mariae camerunensis* Alexander 3,300 ft. Bannerman (1915),  
3,000 ft.  
*Apalis cinerea cinerea* (Sharpe), 3,600 ft. Bannerman (1915), 3,000 ft.  
*Urolais epichlora epichlora* (Reichenow), 1,750 ft.  
*Poliolais lopesi alexanderi* Bannerman, 3,500 ft. Bannerman (1915),  
3,000 ft.  
*Cisticola discolor discolor* Sjöstedt, 3,500 ft. Boulton and Rand (1952),  
3,000 ft.  
*Psalidoprocne fuliginosa* Shelley, Sea-level.  
*Coracina caesia preussi* (Reichenow), 1,900 ft.  
*Laniarius atroflavus atroflavus* Shelley, 3,300 ft. Reichenow (1892), 3,000 ft.  
*Laniarius poensis poensis* (Alexander), 1,400 ft.  
*Dryoscopus angolensis boydi* Bannerman, 4,200 ft.  
*Malaconotus gladiator* (Reichenow), 4,500 ft. Reichenow (J. F. O. 1892,  
page 441), 3,000 ft.  
*Onychognathus walleri preussi* Reichenow, 4,000 ft. Reichenow (1892),  
3,000 ft.  
*Zosterops senegalensis stenocricotus* Reichenow, 1,700 ft.  
*Speirops lugubris melanocephalus* (Gray), 6,000 ft.  
*Cinnyris reichenowi preussi* Reichenow, Sea-level.  
*Chalcomitra ursulae* (Alexander), Grote (1948), 3,000 ft.  
*Cyanomitra oritis oritis* (Reichenow), 1,900 ft.  
*Ploceus insignis insignis* (Sharpe), 4,000 ft. Reichenow (1892), 3,600 ft.  
*Ploceus melanogaster melanogaster* Shelley, 1,800 ft.  
*Cryptospiza reichenovii reichenovii* (Hartlaub), 3,200 ft. Bannerman (1915),  
3,000 ft.  
*Nesocharis shelleyi shelleyi* Alexander, 4,000 ft.

- Poliospiza burtoni burtoni* (Gray), 5,500 ft. Boulton and Rand (1952), 4500 ft.
- Linurgus olivaceus olivaceus* (Fraser), 3,400 ft. Boulton and Rand (1952), 3,000 ft.

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## On the taxonomy of *Athene noctua* in Israel

by JAMES M. HARRISON and HAIM HOVEL

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The taxonomic position of *Athene noctua* (Scopoli) in Israel is by no means simple. Adding to the difficulties is the fact that the species is extremely variable; this variability is at times apparent even in the field and Dr. Mendelssohn informs us (*in litt.* 12.11.63) that he saw a pair during the late winter, sitting close together on a telephone wire near Tel Aviv, one looking very light, the other quite dark.

Israel by virtue of its geographical situation would undoubtedly favour an exchange of genes with certain contiguous races. The principal of these being the Balkan form *Athene noctua indigena* C. L. Brehm to the north, as well as to the west on those eastern Mediterranean islands lying just off shore, while to the south in the delta of the Nile a probable influence by the resident form there *A. n. glaux* (Savigny) has to be recognised. Again on the Arabian peninsula the widely distributed *A. n. saharae* (Kleinschmidt) most certainly infiltrates into the desert country of the southern half of Israel, and there is also evidence that this form has extended northwards along the shores of the Dead Sea and into the northern Ghor where specimens have been collected in the Jericho district of the Wadi Kelt.

The taxonomic position as set out by Dementiev (*et al.*, 1951) and Meinertzhagen (1954) needs to be re-examined in the light of the above